



RFF REPORT

Expanding the Toolkit: The Potential Role for an Emissions Containment Reserve in RGGI

Executive Summary

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Executive Summary

The Regional Greenhouse Gas Initiative (RGGI) is a market-based program that sets a cap on carbon dioxide (CO₂) emissions from the electricity sector in nine Northeastern states and allows trading of emissions allowances in order to achieve compliance at the least possible cost. RGGI is now in the midst of its 2016 Program Review, the second periodic assessment of its performance and design.

Since the outset of RGGI in 2009, the price of emissions allowances has proven to be lower than most observers expected. The quarterly auction of allowances has often cleared at or near the lowest possible price allowed by the program's design, known as the price floor ("auction reserve price"). An outcome of the first RGGI Program Review

(2012) was to tighten the stringency of the program, which led to an increase in the price of allowances after 2013, even triggering the cost containment reserve, the fixed additional supply of allowances available on the market only when prices surpass specified levels. Since December 2015, however, prices have been declining and they are again near the price floor. There is a recognition that even after the completion of the 2016 Program Review, compliance costs and allowance prices may again settle in at levels that are lower than expected, which has been the experience across most cap-and-trade programs. As part of the current review, RGGI officials are considering adjustments to the program's design to improve and help stabilize the performance of the market for allowances going forward, including the

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introduction an emissions containment reserve (ECR).

What Is an Emissions Containment Reserve (ECR)?

An ECR is a mechanism intended to support the program by reducing the number of allowances that are sold at low prices. Implementation of an ECR would not replace the price floor, which applies to all allowances and ensures that none are sold below the reserve price. An ECR would be in addition to the price floor—specifying a minimum price above the price floor that would apply to only a set portion of the allowances offered at the auction.

The ECR mechanism is simple. If the demand for allowances is low, the auction clearing price will fall. If the auction price falls to the minimum prescribed by the ECR, then some or all of the set amount of allowances associated with the ECR would not be sold and the allowance price would respond to the reduced supply accordingly. The ECR could be designed to have multiple price “steps,” each associated with a different set of allowances.

How Does an ECR Affect the Allowance Market?

We find that an ECR supports allowance prices when allowance demand is lower than anticipated. In both the simulation modeling and laboratory experiments we performed, we did not identify any ways that an ECR might not work as expected.

A low allowance price results from low demand for emissions allowances. In this analysis, we simulated and examined scenarios with low allowance demand resulting from expanded availability of hydro and other renewable energy, nuclear power, low electricity demand, and changes in fuel prices. In the program currently, the allowance price has to fall all the way to the price floor before

low allowance demand would result in any additional reduction in emissions.

In contrast, **an ECR leads to a sharing of the benefits of lower-than-expected compliance costs between economic and environmental interests.** A lower allowance price benefits the economy and fewer emissions benefit environmental goals.

Low allowance demand might be the result of reduced electricity demand due to technological improvements, state and local government policies to support CO₂ reduction goals, and other market factors. By sharing the benefits of low allowance demand between economic and environmental interests, **an ECR supports climate change mitigation efforts by state and local governments, companies, and individuals.**

Usually in commodity markets, one expects to see supply reduced when demand is low. For example, when the price of natural gas falls, one expects to see a reduction in drilling activity, resulting in less natural gas coming into the market. **This interaction between demand and supply helps reduce price volatility.** In simulations and laboratory experiments assessing the ECR mechanism, we observe this result.

Laboratory experiments also show that an ECR is easy for market participants to understand and does not interfere with the performance of the allowance auction. **Transparency is enhanced by an ECR, which establishes a predictable and timely system for withholding allowances from auction**—instead of waiting for a future program review to determine an adjustment to account for lower-than-expected compliance costs.

A large bank of accumulated allowances motivated adjustments in the 2012 Program Review and is of concern again now. By reducing the supply of allowances, an ECR might be expected to reduce the banking of

allowances. However, **our research provides mixed results regarding the effect of an ECR mechanism on banking.** Simulation modeling demonstrates that if the ECR is going to be triggered in a future year, then compliance entities might acquire allowances in the near term for later use. In practice, though, future market outcomes are hard to predict—and the laboratory market experiments with human subjects show that the ECR would reduce the amount of banking that occurs.

How Is an ECR Implemented?

The RGGI states would need to make only a couple of design decisions to implement an ECR. One is the number of price steps and the quantity of allowances associated with each step. In modeling and experiments we represented a one-step ECR, a multiple-step ECR, and a continuous ECR ramp. The second decision is the price level of the ECR step(s). In this report, we refrain from expressing an opinion about these choices; however, in formal comments submitted to RGGI as part of the stakeholder process, we outlined a straw proposal to help focus the discussion (See Appendix B).

This independent research and analysis does lead us to make two recommendations:

Simply put, the RGGI states should design and adopt an ECR. We identify various benefits associated with an ECR mechanism and we have not found a potential downside. If the price of allowances does not fall below expected levels, an ECR would have no effect; if it does, an ECR can help support the program by reducing the sale of allowances at low prices.

RGGI should consider a multi-step ECR. Whereas a single-step ECR provides simplicity and important benefits, a multi-step ECR preserves and potentially enhances this outcome—while making it even less likely that

the auction clearing price will settle at any specific price level.

Although an ECR is independent of its counterpart (the cost containment reserve that applies when prices are higher than expected), the two mechanisms are implemented in identical ways. The cost containment reserve makes available a quantity of allowances at or above a prescribed price, thereby sharing the risk of higher-than-expected costs between economic and environmental interests. The ECR shares the benefits of lower-than-expected costs by reducing the allowance supply when the allowance price falls to a predetermined level.

What Are the Benefits for RGGI?

We discover that an ECR mechanism would provide several important benefits to help improve the functioning of the market for emissions allowances in RGGI:

- An ECR shares the risks and benefits of changes in the demand for emissions allowances between economic and environmental interests.
- It helps preserve the incentive for state and local government action and individual efforts to address climate change goals by enabling additional emissions reductions when prices are low.
- An ECR is transparent and can be expected to reduce price volatility, providing a more predictable market environment.
- The ECR does not eclipse the importance of regular RGGI program reviews, but it may make those reviews significantly easier to accomplish.

Read the full report:

[Expanding the Toolkit: The Potential Role for an Emissions Containment Reserve in RGGI](#)